



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/319,258 06/11/99 ASAI

M P17856

007055 MMC2/1015
GREENBLUM & BERNSTEIN, P.L.C.
1941 ROLAND CLARKE PLACE
RESTON VA 20191

EXAMINER

ALCALA, J

ART UNIT

PAPER NUMBER

2841

DATE MAILED:

10/15/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/319,258

Applicant(s)

ASAI ET AL.

Examiner

Jose H Alcala

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6, 8, 11, 12, 46 and 49 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9, 10, 13-45, 47 and 48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 37 CFR 1.71(a)-(c):

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

(b) The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old. It must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must explain the mode of operation or principle whenever applicable. The best mode contemplated by the inventor of carrying out his invention must be set forth.

(c) In the case of an improvement, the specification must particularly point out the part or parts of the process, machine, manufacture, or composition of matter to which the improvement relates, and the description should be confined to the specific improvement and to such parts as necessarily cooperate with it or as may be necessary to a complete understanding or description of it.

2. The specification is objected to under 37 CFR 1.71 because it has disclosed that in one of the embodiments: the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of more than copper but less than titanium or a noble metal, which is not enabling because copper has an ionization tendency higher than titanium or a noble metal, so it is impossible to have a metal with an ionization tendency of more than copper and less than titanium or a noble metal. It is suggested that what the applicant meant disclose was that: the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of less than copper but more than titanium or a noble metal.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2,7,22-24,27,45 and 47 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding Claims 2 and 7, the limitation that: "the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of more than copper but less than titanium or a noble metal", is not enabling because copper has an ionization tendency higher than titanium or a noble metal, so it is impossible to have a metal with an ionization tendency of more than copper and less than titanium or a noble metal. It is suggested that what the applicant meant to say is that: "the surface of the roughened layer is covered with a layer of a metal having an ionization tendency of less than copper but more than titanium or a noble metal".

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-5,13-26,28-45,48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1-2 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the positive claiming of a second conductor circuit and a second interlaminar insulating layer. If these elements are part of the invention they have to be positively claimed, not just as part of the product by process limitation included in the claim.

Claim 1-2 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: failing to positively claim a second conductor circuit and a second interlaminar insulating layer, and failing to point out how these elements are located in relation to the other elements of the device.

Regarding Claims 1 and 2, the "electroless plated film" and the "electrolytic plated film", should not be labeled as the process that made them, but as a "first film" and a "second film".

Regarding Claim 2, in lines 6-7 the recitation: "the surface of the roughened layer is covered with a layer of a metal" is vague, because it is not clear which one (or if both) of the roughened layers is covered with a layer of metal. In addition it is not clear how is this layer of metal located in relation to the other elements of the claim.

Regarding Claims 3 and 22, the limitation: "the roughened layer is on at least a part of the surface inclusive of a side surface of the conductor circuit". This recitation is

Art Unit: 2841

vague, and it is not clear how the roughened layer can be inclusive of a side surface of the conductor circuit.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. Claims 13,15,16,19,20,21,30,31,35,36,40 and 41 are rejected under 35

U.S.C. 102(e) as being anticipated by Uno et al. (US Patent No. 5,827,604). As best understood by the examiner:

Regarding Claim 13, Uno teaches a printed circuit board (Reference Number 1) provided with a conductor layer (the combination of Reference Numbers 3,9 and 10) comprising an alignment mark (Reference Number 9), in which a roughened layer (Reference Number 9) is formed on at least a part of the surface of the conductor layer.

The label "alignment mark" is an intended use limitation, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed device from a prior art device satisfying the claimed structural limitations. See *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

Regarding Claim 15, Uno teaches all the limitations of the instant claimed invention as stated supra for Claim 13, an opening (Reference Number 11) exposing the conductor layer. The limitations regarding how the opening is made are product by

process limitations. See the section about a product by process claim in the rejection of Claim 1.

Regarding Claim 16, Uno teaches a metal layer (Reference number 10) on the conductor layer exposed from the opening portion, but fails to teach that the layer is of nickel-gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the layer of nickel-gold, since for this application it is within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding Claims 19,20,21,30,31,35,36,40 and 41 the limitations regarding how the printed circuit board is made are product by process limitations. If the product in the product-by-process claims are the same as or obvious from a product of the prior art, the claims are unpatentable even though the prior product was made by a different process. See In re Thorpe, 227 USPQ 964,966 (Fed.Cir 1985). A "product by process" claim is directed to the product per se, no matter how actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a

Art Unit: 2841

product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1,3,4,5,25,26 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. (US Patent No. 5,827,604). As best understood by the examiner:

Regarding Claim 1, Uno teaches a printed circuit board (Reference Number 1) having a first interlaminar insulating layer (Reference Number 4) on a conductor circuit (the combination of Reference Numbers 3,9 and 10) of a substrate (Reference Number 2) and a second interlaminar insulating layer (Reference Number 4, at the bottom part of Figure 5) on a second conductor circuit (the combination of Reference Numbers 3,9 and 10 at the bottom part of Figure 5) wherein the conductor circuit is comprised of a first film (Reference number 3) and a roughened layer (Reference Number 9) is formed on at least a part of the surface of the conductor circuit.

The limitations that the printed circuit board is "formed by laminating", the limitation: "repeating formation", and the limitations saying that the first film is "electroless plated" and that the second film is "electrolytic plated" are product by

process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Uno fails to teach a second film on the conductor circuit. In addition Uno fails to teach that a second conductor circuit and a second interlaminar insulating layer on that second conductor circuit, are both located on top of the first interlaminar insulating layer and the first conductor circuit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a second film to the first electric conductor and to set a second interlaminar insulating layer on a second conductor circuit on top of the first interlaminar insulating layer and the first conductor circuit, thus improving the electrical conduction of the circuit board and making the substrate more stable and less flexible by adding a new conductor circuit, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art and that rearranging parts of an invention involves only routine skill in the art. See *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 and *In re Japikse*, 86 USPQ 70.

Regarding Claim 3, Uno teaches that the roughened layer is on at least part of the surface inclusive of a side surface of the conductor circuit (See figure 5, where the roughened layer 9 is exposed at either side surfaces of the conductor circuit).

Regarding Claim 4, Uno teaches that the roughened layer is on at least a part of a side face of the conductor circuit (See figure 5, where the roughened layer 9 is exposed at either side face of the conductor circuit).

Regarding Claims 5,25 and 26, Uno teaches that the roughened layer (Reference Number 9) is a plated layer of copper-nickel-phosphorus alloy (column 5, lines 22-23).

Regarding Claim 44, the limitations that the first film is "electroless plated" and that the second film is "electrolytic plated", and that that the "electrolytic plated film is formed on the electroless plated film" are product by process limitations. Uno teaches the structural limitations. See the section about a product by process claim in the rejection of Claim 1.

11. Claims 2,22,23,24, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. (US Patent No. 5,827,604). As best understood by the examiner:

Regarding Claim 2, Uno teaches a printed circuit board (Reference Number 1) having a first interlaminar insulating layer (Reference Number 4) on a conductor circuit (the combination of Reference Numbers 3,9 and 10) of a substrate (Reference Number 2) and a second interlaminar insulating layer (Reference Number 4, at the bottom part of Figure 5) on a second conductor circuit (the combination of Reference Numbers 3,9 and 10 at the bottom part of Figure 5) wherein the conductor circuit is comprised of a first film (Reference number 3) and a roughened layer (Reference Number 9) is formed on at least a part of the surface of the conductor circuit, and the surface of the roughened layer is covered with a layer of tin (Reference Number 10) which has a ionization tendency of less than copper but more than titanium or a noble metal.

The limitations that the printed circuit board is "formed by laminating", the limitation: "repeating formation", and the limitations saying that the first film is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Uno fails to teach a second film on the conductor circuit. In addition Uno fails to teach that a second conductor circuit and a second interlaminar insulating layer on that second conductor circuit, are both located on top of the first interlaminar insulating layer and the first conductor circuit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a second film to the first electric conductor and to set a second interlaminar insulating layer on a second conductor circuit on top of the first interlaminar insulating layer and the first conductor circuit, thus improving the electrical conduction of the circuit board and making the substrate more stable and less flexible by adding a new conductor circuit, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art and that rearranging parts of an invention involves only routine skill in the art. See *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 and *In re Japikse*, 86 USPQ 70.

Regarding Claim 22, Uno teaches that the roughened layer is on at least part of the surface inclusive of a side surface of the conductor circuit (See figure 5, where the roughened layer 9 is exposed at either side surfaces of the conductor circuit).

Regarding Claim 23, Uno teaches that the roughened layer is on at least a part of a side face of the conductor circuit (See figure 5, where the roughened layer 9 is exposed at either side face of the conductor circuit).

Regarding Claim 24, Uno teaches that the roughened layer (Reference Number 9) is a plated layer of copper-nickel-phosphorus alloy (column 5, lines 22-23).

Regarding Claim 45, the limitations that the first film is "electroless plated" and that the second film is "electrolytic plated", and that that the "electrolytic plated film is formed on the electroless plated film" are product by process limitations. Uno teaches the structural limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

12. Claims 9,10 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. (US Patent No. 5,827,604).

Regarding Claim 9, Uno teaches a multiplayer printed circuit board (Reference Number 1) comprising a substrate (Reference Number 2) provided with an underlayer conductor circuit (the combination of Reference Numbers 3,9 and 10 at the bottom part of Figure 5), an interlaminar insulating layer (Reference Number 4, at the bottom part of Figure 5) formed thereon and an upper layer conductor circuit (the combination of Reference Numbers 3,9 and 10 at the top part of Figure 5) and a viahole (Reference Number 7) in which the viahole is comprised of a film (Reference Number 6), and a roughened layer (Reference Number 9) is formed on at least a part of the surface of the underlayer conductor circuit connected to the via hole.

The limitations saying that the first film of the viahole is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. In addition the limitation saying that the roughened surface is "formed by etching treatment, polishing treatment, or redox treatment, or having a roughened surface formed by a plated film" is also a product by process limitation. See the section about a product by process claim in the rejection of Claim 1.

Uno fails to teach that the under layer conductor circuit is on top of the interlaminar insulating layer. Furthermore, Uno fails to teach a second film on the viahole. In addition Uno fails to teach that the viahole is connecting both the conductor circuits to each other.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a second film to viahole, to set the under layer conductor circuit on top of the interlaminar insulating layer, and to make the viahole in a way to be connecting both the conductor circuits to each other, thus improving the electrical conduction of the circuit board and making the substrate more stable and less flexible by adding more layers, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art and that rearranging parts of an invention involves only routine skill in the art. See *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 and *In re Japikse*, 86 USPQ 70.

Regarding Claim 10, Uno teaches that the roughened layer (Reference Number 9) is a plated layer of copper-nickel-phosphorus alloy (column 5, lines 22-23).

Regarding Claim 48, the limitations that the first film is "electroless plated" and that the second film is "electrolytic plated", and that that the "electrolytic plated film is formed on the electroless plated film" are product by process limitations. Uno teaches the structural limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

13. Claims 17,32,37 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. (US Patent No. 5,827,604). As best understood by the examiner:

Regarding Claim 17, Uno teaches all the limitations of the instant claimed invention as stated supra for Claim 13, and that the conductor layer is comprised by a first film (Reference number 3).

Uno fails to teach that the conductor layer comprises a second film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a second film to the electric conductor, thus improving the electrical conduction of the circuit board and making the substrate more stable and less flexible by increasing the thickness, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art See *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

The limitations that the first film is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Regarding Claims 32,37 and 42, the limitations regarding how the printed circuit board is made are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

14. Claims 14,18,28,29,33,34,38,39,and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. (US Patent No. 5,827,604). As best understood by the examiner:

Regarding Claim 14, Uno teaches a printed circuit board (Reference Number 1) provided with a conductor layer (the combination of Reference Numbers 3,9 and 10) comprising an alignment mark (Reference Number 9), in which the conductor layer is comprised by a first film (Reference number 3).

Uno fails to teach that the conductor layer comprises a second film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a second film to the electric conductor, thus improving the electrical conduction of the circuit board and making the substrate more stable and less flexible by increasing the thickness, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art See *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

The label "alignment mark" is an intended use limitation, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed device from a prior art device satisfying the claimed structural limitations. See *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

The limitations that the first film is "electroless plated" and that the second film is "electrolytic plated" are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Regarding Claim 18, Uno teaches that the roughened layer (Reference Number 9) is on at least a part of the surface of the conductor layer.

Regarding Claim 28, Uno teaches an opening (Reference Number 11) exposing the conductor layer. The limitations regarding how the opening is made are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Regarding Claims 29,33,34,38,39,and 43, the limitations regarding how the printed circuit board is made are product by process limitations. See the section about a product by process claim in the 35 U.S.C. 102(e) rejection above.

Allowable Subject Matter

15. Claims 6,8,11,12,46 and 49 are allowed.

16. The following is an examiner's statement of reasons for allowance: The prior art fails to teach, disclose, or suggest, either alone or in combination, at least on claim 6: the steps of "etching and removing the electroless plating film beneath the plating resist to form a conductor circuit device comprised of the electroless plated film and the electrolytic plated film, forming a roughened layer on at least a part of the surface of the conductor circuit and then forming an interlaminar insulating layer". In addition the prior art fails to teach, disclose, or suggest, either alone or in combination, on claim 11: the

Art Unit: 2841

steps of: "subjecting the interlaminar insulating layer to an electroless plating, forming a plating resist thereon, subjecting the interlaminar insulating layer to an electrolytic plating, removing the plating resist, etching and removing the electroless plated film beneath the plating resist to form an upperlayer conductor circuit comprised of the electroless plated film and the electrolytic plated film and a viahole".

17. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

18. Applicant's arguments filed 8/13/01 have been fully considered but they are not persuasive. Regarding independent claims 1 and 2, and independent claims 3-5, 22-26, 44 and 45 applicant argues that the Uno reference fails to teach the limitations pertaining to the method of making the printed circuit board. Applicant's argument is not persuasive, because those limitations are product by process limitations. If the product in the product-by-process claims are the same as or obvious from a product of the prior art, the claims are unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). A "product by process" claim is directed to the product per se, no matter how actually made, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this

issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that **an old or obvious product produced by a new method is not patentable as a product**, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

19. Applicant's arguments regarding independent claim 9, and dependent claims 10 and 48, saying that Uno fails to disclose or suggest: "a viahole comprised of an electroless plated film and an electrolytic plated film" are not persuasive. Uno teaches a viahole (Reference Number 7) in which the viahole is comprised of a film (Reference Number 6). The addition of a second film is stated in the rejection stated supra as to have been an obvious duplication of known elements. The limitations saying that the films are "electroless plated" and "electrolytic plated", are product by process limitations, see explanation for claims 1 and 2 above. In addition applicant argues that Uno fails to disclose or suggest a: "roughened layer...formed on at least a part of the surface of the underlayer conductor circuit connected to the viahole". That argument is not found persuasive since Uno teaches a roughened layer (Reference Number 9) on at least a part of the surface of the underlayer conductor circuit connected to the via hole. Applicant is reminded that the word "formed" was deleted from the claim.

20. Regarding independent claims 13 and 14, and dependent claims 15-21 and 28-43, applicant argues that Uno fails to disclose or suggest "an alignment mark". That argument is not found persuasive since that limitation is an intended use limitation, and

Art Unit: 2841

a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

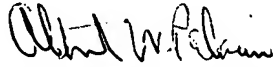
Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached from Monday to Friday.

22. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (703) 308-3301. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

23. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JHA
October 12, 2001

 10-15-01
ALBERT W. PALADINI
PRIMARY EXAMINER